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ABSTRACT

Several issues are discussed related to the administration and operation of Mountain View College's (MVC) Cognitive Style Program, an assessment system based on the Modified Hill Model, which determines preferred learning styles for each student and thus aids the student in selecting appropriate classroom environments. After introductory material outlining the history of the program since its inception in 1972, the report discusses the professional development seminars offered to faculty and staff in a continuing effort to keep the college community informed of the latest developments in cognitive mapping. This is followed by a description of the services available to MVC counselors and instructors in the areas of individual or class mapping, map interpretation, and the prescription of appropriate instructional modes. Next, the report describes MVC's efforts to share information concerning the program with other institutions through professional seminars and the dissemination of program reports. The computer support utilized in the program is then examined, followed by an outline of the policies concerning the diagnosis of instructional materials, the assessment of student maps, and the ultimate responsibility of the student for choosing appropriate instructional modes. A discussion of cognitive style as a psychological and educational concept is appended. (JP)

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MOUNTAIN VIEW COLLEGE'S COGNITIVE STYLE PROGRAM: A DESCRIPTION

by

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MOUNTAIN VIEW COLLEGE'S COGNITIVE STYLE PROGRAM -

A DESCRIPTION

Harryette Ehrhardt

MOUNTAIN VIEW COLLEGE'S IMPLEMENTATION

During the 1972-73 academic year, Mountain View College sponsored two staff development workshops on Cognitive Style which were facilitated by Oakland Community College staff members. Following these workshops, which were attended by 85 Mountain View College faculty members, five professionals visited Oakland Community College. Mountain View College then instituted a pilot project during the 1973 Fall Semester which involved 20 faculty and 250 students. The results of the pilot study showed that Cognitive Style was a feasible idea. Since its inception at Mountain View College, in excess of 18,000 students have been mapped and approximately 3,000 professional staff have visited to view Mountain View College's program or participate in professional workshops presented by Mountain View College staff. An estimated thirty percent of the Mountain View College faculty are now using Cognitive Style data for instructional design/development efforts, or as a diagnostic tool in the classroom setting. Presently, in addition to the standard lecture presentation, courses are offered in such alternative modes as audio tape, audiovisual tutorial, video presentation, computer-assisted instruction, small group seminar, peer instruction, and written packaged or programmed instruction. Institutional support for this concept is seen in the implementation of several satellite learning laboratories in the areas of Biology, Humanities, Physical Education, and Business.

IN-HOUSE EVALUATION

An in-house evaluation of the program was conducted in the Fall of 1976 and repeated in the Spring of 1977 and 1980. A questionnaire was distributed to students and faculty members who had fully participated in the Cognitive Style program. Each had his or her class mapped with the modified Hill instrument through the Testing Center, and each student's map was interpreted. Faculty or students using only part of the program, or another model, were not included. Anonymous replies were received from 50% or more of the staff and students. The replies substantiated the assumption that the Cognitive Style program at Mountain View College was successful. In each evaluation, students replied that the map gave them useful information on how they learn and that they had actually changed specific learning habits as a result of the map interpretation. Responding students expected to select course sections on the basis of how they learn. A majority of the students felt that they understood their map enough to describe it to another person and most actually had discussed their Cognitive Style with someone. A large majority of the students replied they would recommend to fellow students that they be mapped.

The faculty evaluation was generally similar. In each study ninety percent replying felt mapping was worth the time involved to participate. Responding instructors indicated they planned to map future classes. Instructors said the mapping process helped them understand the Cognitive Styles of their students and helped the students understand their own Cognitive Style. Responding faculty felt the mapping helped them understand how they could change various aspects of instruction to improve student learning, and that they would "probably change aspects of instruction as a result of the mapping process." From both groups, Mountain View students and staff, additional comments and suggestions provided valuable information for the improvement of our program at Mountain View College. The students and staff clearly indicated they felt the experience was a valuable one and would be of practical use to them.

PARTICIPATION

All the services related to Cognitive Style Mapping are available to all professional Mountain View College staff - full time, part-time, day, evening, credit and community services.

PROFESSIONAL DEVELOPMENT

All professionals are invited to participate in any of the Cognitive Style professional development seminars. These may be offered individually or to groups on request through the Coordinator of Cognitive Style Mapping. Mountain View College has an up-to-date collection of Cognitive Style Mapping dissertations as well as texts and journal articles. Professionals may view "The Best of Joe Hill," an hour long edited video tape of Dr. Hill's seminar on the Educational Sciences or any of the several professional video tapes. Map interpretation may be discussed with any member of the Mountain View College counseling staff. Resource Consultants are available to discuss the instructional development implications of Cognitive Style.

INDIVIDUAL OR CLASS MAPPING

Any counselor or instructor may request that a student be administered the Cognitive Style instrument. The instrument is available in written or oral form. The Testing Center will provide two (2) copies of each map, one for the professional and one for the student. Any staff person, professional or nonprofessional may also be mapped. Divisions may have an entire staff mapped and have those maps interpreted for improvement in communication and mutual understanding.

INDIVIDUAL MAP INTERPRETATION

Arrangements may be made for the division liaison counselor to interpret a student's map. This may be done through the Coordinator of Cognitive Style or directly through the counseling center. Naturally, any instructor who is qualified may choose to interpret a student's map.

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CLASS MAP INTERPRETATION

Again, the instructor may interpret a class map or arrange with the liaison counselor to meet with the class for a group interpretation. Instructor and counselor determine the best instructional mode for interpretation and who will bring the audio visual materials and student maps. Counselors bring a copy of the student's guide "In Search of Buried Treasure" for each student to the interpretation. The guides are given to the students. Often an instructor makes an overhead transparency of his or her map and projects it during the class map interpretation. This helps the students understand the expectations of the instructor and allows the students to assume greater responsibility for success in the class. Class map interpretation requires one class period.

AVAILABLE MODES FOR MAP INTERPRETATION

Cognitive Style maps may be interpreted by a counselor or instructor in an individual session or class setting. In class, transparencies are provided, or the twenty minute slide/tape presentation may be used. Also available are self-instructional materials for use by two (2) students, audio tapes, video interpretation or slide/tape presentations accessible through the library. In each instance, the student should have the opportunity to discuss the map results with a professional thoroughly familiar with the concept of Cognitive Style Mapping.

DIAGNOSING FOR INSTRUCTIONAL DEVELOPMENT

Each Mountain View College Learning Resource Consultant can help diagnose a class to determine the most appropriate instruction to provide. The diagnosis will likely include but not be limited to Cognitive Style.

PRESCRIBING UTILIZING COGNITIVE STYLE MAPPING

Both Mountain View College Counselors and Learning Resource Center Consultants should be helpful in assisting with prescribing appropriate instruction. Prescription should be based on information ascertained from numerous sources. Many tools, including Cognitive Style are available through the Testing Center. Even if it were possible, it would not always be desirable to provide a student with instruction to match the student's preferred learning style. Often a student's skill should be developed to help the learner be comfortable and effective through some other learning source. It is important to consider Cognitive Style when prescribing class or individual instructional mode. It is as important to match as to mismatch instruction with student cognitive style. Determination of appropriate instructional style is a responsibility shared by professional and student.

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Other uses of Cognitive Style not involving alternative class instruction include its use for instructional development, determination of appropriate requests for materials, out of class use such as mid-management students use in their off-campus instruction, and as a positive counseling tool for spotting and averting potential problems.

OFF-CAMPUS REQUESTS

Mountain View College staff receive many requests for information on our Cognitive Style program. All Mountain View College professionals will be provided with support to answer inquiries. One major goal of the Cognitive Style program is to involve all interested staff at the level they desire. A number of Mountain View College staff have presented off-campus presentations on Cognitive Style and hosted professional visits to the campus with Cognitive Style one area of interest to the visitor. Mountain View College staff frequently present the Cognitive Style concept to graduate classes, professional groups or civic organizations. Support for each of these is available through the Cognitive Style Mapping Coordinator. If preferred, requests for information may be forwarded to the Cognitive Style Mapping Coordinator who will respond by letter, phone or personally as is appropriate or join a staff person to jointly respond. Slides, audio and video tapes, transparencies and Cognitive Style printed materials are available for Mountain View College professionals making off-campus presentations on Cognitive Style Mapping. The professional obligation of each Mountain View College staff person in using the materials is detailed under another heading.

MIRROR

A Mountain View College class or section can be selected by the student with counselor or instructor guidance by using the Mountain View College Mirror. The Mirror is a "reflection" of the instructional program for each section of each class offered by our college. It is updated yearly.

PROFESSIONAL OBLIGATION

The concept of Cognitive Style Mapping is drawn from numerous disciplines - psychology, business, education, math, biology, physics, philosophy, the humanities, history, communication. In fact, it is difficult to suggest an area to which the concept is not indebted. There are a number of cognitive style models including field independent/field dependent; impulsive vs. reflective; analytic vs. nonanalytic; cognitive complexity vs. simplicity; and the McKenney model among others. The implementation at Mountain View College, however, is based on a system developed by the late Dr. Joseph Hill, a Physicist and President of Oakland Community College. We use a Modified Hill Model. Our professional obligation is to accurately disseminate information and maintain a professional stance in our use of the concept. Specifically, we offer professionals the opportunity to observe our implementation of Cognitive Style Mapping to the extent that it benefits the students at Mountain View College. We offer professional seminars on Cognitive Style Mapping. We provide statistical

data and professional support for research. We do not disseminate copies of material without the assurance that the receiving party is knowledgeable in its use, i.e., we do not give copies of the map instrument, the student guide, or professional materials unless the institution or professional has an understanding of Cognitive Style.

AVAILABLE COMPUTER SUPPORT

In the past, the computer has been helpful on various cognitive style research projects for Mountain View College professional staff and professionals from other institutions. The cognitive style data on thousands of students and hundreds of professionals are available to professionals for approved research. Naturally, the data are not traceable to any individual.

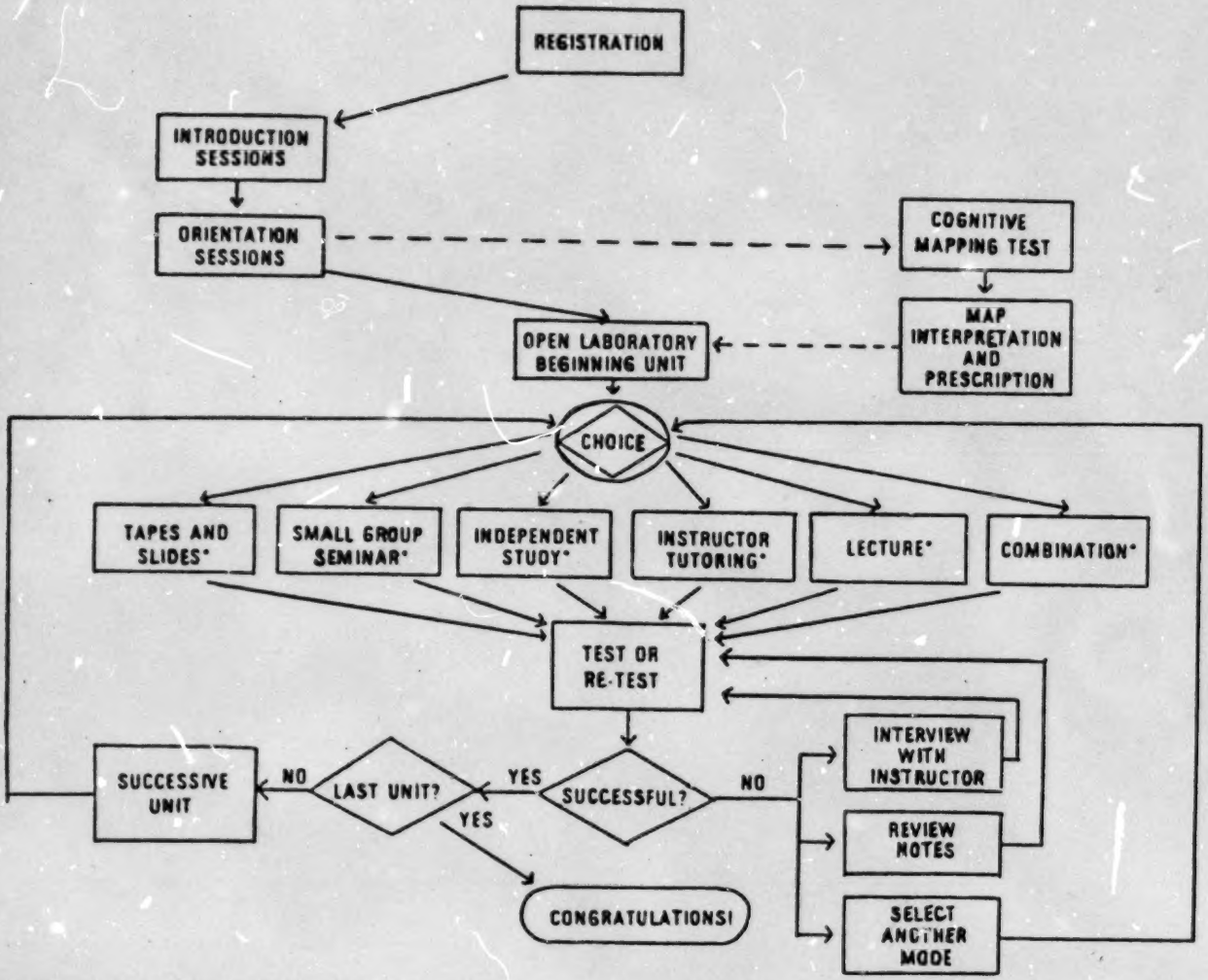
The greatest use of the computer is for storing and assessing cognitive style data and for generating cognitive style statistics for Mountain View College professionals.

In addition to the individual cognitive style map (No. 1 below), professionals may request a computer generated class diagnostic record. It includes a composite class map (No. 2 below) of the (1) number and percent of majors, minors, and negligibles, (2) mean and, (3) standard deviation for each element. A second part of the record (No. 3 below) is a class list of students by name and Social Security number with individual scores for each of the 28 elements.

Below is a reduced abbreviated version of the reports. In addition, bar graphs, histograms and other specialized statistics may be generated.

Examples of the reports have been removed.

STUDENT FLOW CHART
UTILIZING ALTERNATIVE MODES AND COGNITIVE STYLE INFORMATION



*PEER TUTORING AVAILABLE WITH ANY MODE

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DIAGNOSING INSTRUCTIONAL MATERIAL

Obviously, if prescriptions are to be written, the instructional materials must also be diagnosed. Mountain View College Resource Consultants can assist in this procedure. The Mountain View College Learning Skills Center has an excellent model for material diagnosis.

To provide the information on individual students necessary for prescription writing, the instructor might also want to determine the reading level of written material used in the class. The Learning Resources Center provides that service by administering a computer program of the Dale Chall Reading Level Test to the written material.

ASSESSING STUDENT MAPS

Maps of every individual mapped through the Testing Center are stored in the computer. These may be called up by providing the Social Security number of the individual whose map is desired. Current class maps may be generated by class and section number. Probably, a student whose map is over a year old should be remapped. In all cases, student confidentiality is of paramount importance. Cognitive Style information is professional information.

DETERMINING COGNITIVE STYLE - ALTERNATIVES

Occasionally Mountain View College professionals use some method other than the modified Hill instrument for determining the cognitive style of their students. Among the possibilities for assessing a student's cognitive style are: Empirical mapping, observation, interview, or another self-assessment instrument. The modified Hill instrument (and it is not a test and should not be called a test) is only one of the possible ways to determine how a student prefers to learn or how a student most efficiently and effectively gains meaning from the environment. The Cognitive Style instrument has been revised a number of times and is now written at about the 5-6 grade reading level. It has not undergone the extensive investigations necessary for absolutely clean validity and reliability. No attempt is made to "defend" the map instrument. It is available as one means for determining cognitive style.

COGNITIVE STYLE MAPPING USE WHEN ALTERNATE INSTRUCTIONAL MODES NOT UTILIZED

One of the major uses of Cognitive Style is to offer the students personal information about learning. Students control a number of variables that influence their college success. With information on how learning most effectively might be achieved, the student should make more intelligent decisions regarding the kind of courses in which to enroll, why and when difficulties might be encountered, how to provide the best home learning environment, and improving study habits. In short, the student should accept the responsibility for personal success in learning.

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SUMMARY

At Mountain View College, cognitive style compliments the philosophy and goals of the institution. Ours is an innovative staff, highly motivated to offer the best possible learning environment to each student. In an institution where concepts survive only if proven of value, nearly a decade of experience has proven that the Cognitive Style program at Mountain View College is useful and effective. Our institution is dedicated to offering success to every individual with which it interacts. Cognitive style as a concept is demanded by our institution, not as an extra, but as a necessity to realize its goal. The program as formally outlined is not mandatory, but acceptance of the precept that individuals prefer to learn differently, that difference can be determined, and it is our institution's and each professional's responsibility to address those differences, and the student should assume joint responsibility for success is basic to working at Mountain View College.

Our cognitive style program is designed to be a positive, nonthreatening, value-free assessment of how each student prefers to learn. It incorporates a plan for assessing that information, interpreting it to students and staff and using the information on cognitive style to create an effective learning environment. In addition it offers students skills to use the information on personal cognitive style to continue to learn successfully after they leave Mountain View College. The program involves the entire institution, all divisions and departments. It has a small budget for materials, one part-time clerical and part-time professional staff. In addition to its major use with students, it serves as a guide to instructional development, a guide to purchase of instructional materials and as a management and a communication tool. The concept has been successfully offered to the business and professional communities off campus through Mountain View College Community Service courses tailored for industry as well as to sister educational institutions. Mountain View College supports the cognitive style needs of the six other colleges in the Dallas County Community College District. Through constant evaluation and revisions reflecting new research on cognitive style, the program will continue to serve our college community in the decade to come.

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FREQUENTLY ASKED QUESTIONS

ABOUT THE PROGRAM AT MOUNTAIN VIEW COLLEGE

Mountain View College is a tax supported community college dedicated to creating the most effective learning environment for students. That philosophical position makes Cognitive Style a very valuable concept for our institution. Mountain View College has been involved in a cognitive style assessment program since the Spring of 1973. In excess of 15,000 students have participated.

The following questions are frequently asked by professionals:

WHAT COGNITIVE STYLE MODEL IS MOUNTAIN VIEW EMPLOYING?

The Modified Hill Model is used at Mountain View College. The roots of the program are based on the concepts developed by the late Dr. Joseph Hill. The model is continuously revised to reflect current knowledge.

DOES MOUNTAIN VIEW COLLEGE OFFER PROFESSIONAL SEMINARS?

Yes, through Community Services. We offer regular professional development seminars throughout the year which are open to any professional. In addition, we can provide a seminar for an institution by special arrangement.

MAY ONE OR MORE OF YOUR STAFF SERVE AS CONSULTANT FOR OUR INSTITUTION?

Possibly, however, as previously mentioned, Mountain View College is a local and state tax supported institution. We cannot justify asking our taxpayers to finance programs out-of-the-county. In order to serve you as a consultant, we must do so on personal time or take professional leave without compensation. Appropriate arrangements should be made by writing the Coordinator of Cognitive Style.

MAY WE USE YOUR MATERIALS?

We are delighted to share with you the Cognitive Style materials we have produced. The only requirement we make is that those who use the materials to administer, interpret, diagnose, or prescribe, using cognitive style, do so after having participated in a cognitive style seminar.

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Mountain View College constantly revises and refines the cognitive style materials. We welcome the opportunity to share and interchange materials and ideas! A list of available materials and their costs may be obtained by writing the Coordinator of Cognitive Style.

MAY WE VISIT YOUR CAMPUS?

We welcome professional visits to Mountain View College. We are proud of our cognitive style implementation and of the total program it complements. If you wish to make a visit to our campus, please contact the Coordinator of Cognitive Style. We can suggest a mutually convenient time for the visitation and plan a program that would best suit your special needs. Cognitive Style is only one of the many areas you may wish to visit. Again, we cannot devote the personal time we wish we could for extended or unexpected visits.

TO WHOM SHOULD I WRITE FOR FURTHER INFORMATION ON THE MVC PROGRAM?

The Coordinator of Cognitive Style, Learning Resources Center, Mountain View College, 4849 West Illinois, Dallas, Texas 75211.

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AN OVERVIEW OF COGNITIVE STYLE

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For the past decade, American Education has emphasized the value of "*individualized instruction.*" In each instructional setting, regardless of age group, subject matter, student characteristics, or other variable, teachers have been encouraged to "*individualize.*" Numerous "materials" and "systems" have been developed commercially, through grants, and independently by dedicated teachers. There is conclusive evidence to support the instructional value of some of these individualized programs. However, there is indisputable evidence that "*individualized instruction*" is not the answer to all the challenges of educating our students.

In the fifties, programmed instruction offered promises of reducting the percentage of failure among learners, but students continued to fail. Subsequently, television was proposed to answer the nation's instructional problems, still, some students did not progress. Hardware was developped to allow students to use visual, tactile, and auditory involvement in materials - some designed to be used at different levels and at varied rates, still some students were unsuccessful.

Bloom's "mastery learning theory" further frustrated professionals! He suggested that ninety percent of the learners who wanted to learn should master the material. The teachers need only understand the students' aptitude and ability and offer quality instruction while varying time requirements. What then was the discrepancy between theory and practice? Perhaps the unanswered question was:

> *HOW CAN WE DETERMINE WHICH OF THE STRATEGIES, TIME FRAMES, AND TEACHING ENVIRONMENTS WILL BE EFFECTIVE FOR EACH STUDENT?*

Until the above question was answered, the objective of American Education to provide every person an equal opportunity to receive an education of high quality could not be realized.

An examination of the literature reveals an intense interest on the part of psychologists in Cognitive Style; however, K. Patricia Cross in her recent book Accent on Learning points to a basic problem that must be addressed:

> Unfortunately, not one teacher or counselor in a hundred knows anything at all about cognitive styles despite the fact that research on cognitive styles has been going on for some twenty-five years in psychology laboratories. For some reason, the research has not been widely applied to educational problems. Kogan (1971, p. 243) politely understates the case when he observes that until recently there was an "almost total lack of articulation...between the psychological study of cognition, on the one hand, and educational research and practice, on the other. Cognition, after all, refers to the process by which knowledge is acquired: perception, memory, thinking, and imagery-and one might have anticipated a long-term and fruitful association between psychological research and the world of education." It is perhaps not too much to hope that a long and fruitful association lies in our future. (Cross, Patricia. Jossey-Bass, 1976, p. 112-113.)

Cognitive Style holds high promise of helping the educator and the student jointly determine the most effective environment for learning by combining information about

how the learner gains knowledge with available alternative instruction. By offering the philosophical support to supply alternatives to traditional instruction, staff development and support services, while not the answer to all the educational ills, does offer hope that we may do a better job of helping students learn.

Cognitive Style is a Concept

Cognitive Style does not deal with the level of achievement of the learner or with the academic ability of the student. It attempts to determine how and where the learning takes place most effectively for each student.

Cognitive Style is Different From Ability or Achievement

A clear distinction between Cognitive Style and ability or achievement is essential to an understanding of the concept. Often initially they are considered as similar or at least related. That misconception accounts for a large measure of the confusion surrounding Cognitive Style.

Cognitive Style addresses behavior and preference. Ability and achievement are both measured as levels or attainment. Cognitive Style is value free. There is no such thing as "good" or "bad" Cognitive Styles. Ability and achievement are described numerically frequently on a compariative or norm reference basis from 1 to 100 or as grade level equivalents--or as percentile ranks. Cognitive Style addresses an individual's preference in one area or lack of it in that area and encourages comparison of the individual with himself or herself in one or more areas--not with a norm or group. Cognitive Style is concerned with qualitative differences of the dimensions described rather than quantitative differences.

There are a Number of Cognitive Style Models

COGNITIVE STYLE MODELS

Based on research compilation by Karen Nelson and Harryette Ehrhardt

MODEL	DEFINITION	PRINCIPAL RESEARCH	MEASURING INSTRUMENT
Field independence vs. field dependence	Differentiated (independent) vs. undifferentiated figure-ground relationships. Field independents tend to extract a figure from its ground or background. Field dependents tend to see figures only in relation to their ground.	Witkin	Embedded Figures Test, Rod & Frame Test; Body Adjustment Test
Scanning vs. focusing (defined as strategies, not as attentional differences)	Posed a problem requiring identification of relevant as opposed to irrelevant information, scanners look for attributes and proceed in a constraint-seeking, broad to narrow fashion, while focusers generate more global, self-sufficient or all-encompassing hypotheses, proceeding in a trial-and-error fashion.	Menninger Foundation; Schlesinger; Bruner Goodnow, Austin	Twenty Questions Concept Attainment Tasks e.g., Bruner et. al. in A Study of Thinking
Broad vs. narrow categorizing	The broad categorizer prefers a small number of categories containing a large number of items, while the narrow categorizer prefers a large number of categories with a small number of members.	Menninger Foundation	Category width Tasks, Object sorting Tasks

MODEL	DEFINITION	PRINCIPAL RESEARCH	MEASURING INSTRUMENT
Leveling vs. Sharpening	In taking in new information, the leveler shows greater readiness to assimilate new stimuli to previous categories while the sharpener tends to differentiate new instances from old.	Menninger Foundation; Gardner; Santostephano	Schematizing Test Wagon Test
Constricted vs. flexible control	Constricted control shows greater susceptibility to interference by irrelevant information while flexible control is evidenced by resistance to interference.	Menninger Foundation; Kleen	Stroop Color-word Test
Tolerance vs. intolerance for incongruous or unrealistic experiences	Tolerance is revealed by more frequent reversals, readier adaptation to unusual perceptions. Intolerance involves the demand for more information before the unusual is accepted.	Menninger Foundation	Aniseikonic lenses; reversible figures
Impulsive vs. reflective responding	Impulsivity is characterized by quick responding while reflectiveness involves considering alternative classification or responses.	Fels Institute; Jerome Kagan	Matching Familiar Figures; Identical pictures
Analytic vs. nonanalytic conceptualize styles	Analytic style entails differentiating properties or attributes while nonanalytic responses may be thematic-descriptive or relational. The analytic is more attentive to similarities in property, the nonanalytic more attentive to functional relationships.	Fels Institute; Jerome Kagan	Conceptual Style Test
Risk-taking vs. caution	The risk-taker will take the risk when there is a low probability of a high payoff, while caution entails preferring low risk with a high probability of low payoff.	Kagan and Wallach	Cost-payoff games
Cognitive complexity vs. simplicity	Cognitive complexity is characterized by hierarchic integration while cognitive simplicity is reflected by use by dimensions of difference. Cognitive simplicity is favored when only horizontal analysis along a dimension is necessary. Cognitive complexity is favored when vertical analysis of relations between dimensions is necessary.	Kelly; Shroder, Driver, Streufert	REP Test Paragraph completion This I Believe Test

MODEL	DEFINITION	PRINCIPAL RESEARCH	MEASURING INSTRUMENT
McKenney two-dimensional model Assimilation: preceptive vs. receptive planning: Systematic vs. intuitive	The perceptive individual assimilates information to his concepts or categories while the receptive individual assimilates data as raw as possible. Preceptives categorize or chunk information as it comes to them while receptives can more often take a new look at the data presented, since they've stored it as data not concepts. Systematic individuals create orderly, sequential plans or strategies. Intuitives prefer ideas, identifying the problem and skipping from part to whole analysis.	McKenney, Keen, Nelson, Botkin	Tasks Assessing each mode: e.g., Identical Pictures (Receptive), Elaboration (Preceptive), Paper Folding (Systematic), Scrambled Words (Intuitive)
Hill Educational Cognitive Style.	Results from a battery of tests are processed to produce a "map" of the many ways each individual seeks meaning. Described is the unique preference for theoretical symbolic input, qualitative code input, cultural determinants and modalities of inference.	Joseph Hill	Battery of achievement tests and inventories
Modified Hill	A "map" describes each individual's Educational Cognitive Style by relating the score results on 28 elements. The resultant map assesses a preferred learning environment.	Oakland Community College Mountain View College of the Dallas County Community College District	Cognitive Style Inventory/ Questionnaire

Cognitive Style Implementation is Based on 4 Precepts

1. Individuals prefer to learn differently.
2. It is possible to determine (imperfectly) how individuals prefer to learn.
3. It is the responsibility of institutions and/or individuals who provide learning environments to consider the Cognitive Style of the learner (and or the instruction.)
4. It is the student's responsibility to use provided Cognitive Style information to structure his or her own learning environment

Cognitive Style is Appropriately Used in Many Settings and with Any Learner

Awareness of one's style of learning has obvious advantages both in an academic setting and in a non-academic learning setting. The value of Cognitive Style transcends the formal academic setting to promote effective life-long learning habits.

Cognitive Style has immediate appeal to educators and those responsible for training in business who seek to build the most effective instructional setting for their students because it seeks to answer the questions relative to matching teaching behavior, learning modes and learners.

Each individual interacting with the concept of Cognitive Style should benefit from the experience. Obviously, the need for Cognitive Style is most critical to those

have failed to benefit from the previous "traditional" learning settings. Cognitive Style is most valuable to minority students, students from low socio-economic settings, and students with learning disabilities. Their need is most obvious in an instructional setting. However, Cognitive Style is useful to all learners and all persons responsible for learning.

It is Not Always Desirable to Match Cognitive Style and Instruction

Another area of frequent misunderstanding surrounding Cognitive Style involves the desirability of matching learner and learning. If it were possible to always offer instruction in the manner "preferred" by the learner, to do so would be a great disservice! (Of course, it would also be impossible!) A Cognitive Style program "takes into account" the Cognitive Style of learner, instructor and instruction to devise the most appropriate combination. When students have experienced considerable frustration in previous learning environments, or are encountering totally new and difficult material, or are development students, a concerted attempt should be made by instructors and students to match Cognitive Style of learner and learning. When students are reviewing already mastered information, are in accelerated programs, are extremely bright individuals or are anticipating moving into an academic or work environment where matching will be improbable, mismatching should be seriously considered by learner and instructor. "Mismatching" is as important a component of a Cognitive Style program as is "matching."

Cognitive Style is Valuable With or Without Alternative Instruction Available

Through Cognitive Style, the instructor obtains a profile of the student's preferred learning style. The instructor and the learner can then "jointly" select the most effective materials and setting for learning for *that student*. Patterns are established for student grouping to reflect the similarities of the student's preferred learning to determine which conceptual approach or teaching style is most appropriate for each group.

Sometimes, alternate instructional material is unavailable or impractical. When that situation exists, Cognitive Style is equally or possibly even more valuable for the student. Numerous opportunities exist for students to create their learning environment apart from the officially prepared one--they may elect to take notes or not to, to study with a peer or alone, to tape a lecture or meet individually with an instructor. Many students have not considered the relative merits of these options if indeed, they have considered the options. Students' recognition of Cognitive Style also enables an understanding of why they may be experiencing frustration, how to discuss differences without attaching value laden emotions to those differences, or how to plan their time and learning effort.

Cognitive Style Implementation is Growing

A number of institutions in a variety of instructional settings have implemented a Cognitive Style program. There are in excess of 20 Cognitive Style models, and the implementation ranges from experimental programs with few subjects to institution-wide involvement with thousands of subjects yearly. Cognitive Style programs are found in industry as a part of the training program and as a communication skill tool at the management level. Programs involve preschool children and adults at all age levels.

In a recent national survey conducted for the League for Innovation in the Community College the authors surveyed 54 member colleges of the League. The purpose of the project was to provide members with information on which of the League institutions were currently utilizing one or more cognitive style inventories or instruments, and to provide narrative description of the courses and programs utilizing cognitive style. The information gathered during the spring and summer of 1979 and compiled

in the fall of 1979 indicated that 25 of the 54 institutions surveyed have ongoing cognitive style programs. In these 25 colleges 8 instruments or models are being used to determine cognitive style. The implementation in the League institutions ranged from use in a single class to campus-wide involvement. Using the midpoint of the report range it was determined that more than 7,000 students were assessed to determine cognitive style.

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